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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

SPEARS, ERIC J

ART UNIT	PAPER NUMBER
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2878

DATE MAILED: 11/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/075,562

Applicant(s)

ALSOBROOKS ET AL.

Examiner

Eric J Spears

Art Unit

2878

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 July 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) 34 and 35 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 15-24 is/are allowed.
- 6) ☒ Claim(s) 1-14 and 25-33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-14 and 25-33 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding Claim 1, the claim fails to recite any element which performs the "identifying", as recited in Claim 1, line 8. The code disk alone is not sufficient to identify a rotational position.

Regarding Claim 25, the claim fails to recite any element which performs the "identifying", as recited in Claim 25, line 7. The code disk alone is not sufficient to identify a rotational position.

Claims not specifically mentioned are indefinite due to their dependency from an indefinite base claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 12, 25, and 32 stand rejected under 35 U.S.C. 102(b) as being anticipated by Sano (6,130,425).

Regarding Claim 1, Sano teaches a rotational position sensor comprising, a hub 4 and 5, a code disk 6, and a housing 1. Sano teaches the code disk gives a rotational position (Col. 7, lines 3-6).

Regarding Claim 12, Sano teaches a turn ring 10 and sensors 13 which cooperate to determine a number of turns.

Regarding Claim 25, Sano teaches a rotational position sensor comprising, a hub 4 and 5, a code disk 6, and a housing 1. Sano teaches the code disk gives a rotational position (Col. 7, lines 3-6). Sano teaches a turn ring 10 and sensors 13 which cooperate to determine a number of turns. Sano also teaches a printed circuit board which is not illustrated (Col. 7, lines 16-17).

Regarding Claim 32, Sano teaches the markings are of cutouts 6a.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2, 3, 5-11, 14, and 33 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Sano (6,130,425).

Regarding Claim 2, Sano teaches a printed circuit board and a photo-interrupter 9 (Col. 7, lines 16-17). However, Sano does not teach the photo-interrupter 9 being attached to the particular circuit board. However, it would have been obvious to one of ordinary skill in the art to attach the photo-interrupter to the preexisting circuit board in order to eliminate the need for a separate board either inside the housing or outside.

Regarding Claim 3, the modified device of Sano teaches the code disk has cutouts (Col. 6, line 66 to Col. 7, lines 3). Sano does not teach the material of the code disk. However, the exact material would have been an obvious design choice to one of ordinary skill in the art in order to provide for a material which is cheap, heat resistant, and opaque to the light being used in the photo-interrupter.

Regarding Claim 5, the modified device of Sano does not use the explicit term "bit", however, Sano teaches the photo-interrupter comprising at least two detectors along a code track (See Fig. 4). The detector 9 would therefore read at least two "bits" of data which is enough to determine a location along the disk. It should also be noted that the photo-interrupter has a finite size and therefore exists at an arbitrary number of positions simultaneously.

Regarding Claim 6, the modified device of Sano does not teach the type of photodetector used in the photo-interrupter. However, choosing a CCD as the type of photodetector would have been an obvious design choice to one of ordinary skill in the art, in order to provide a photodetector which is readily available.

Regarding Claim 7, the modified device of Sano does not teach the type of light source used in the photo-interrupter. However, choosing an LED as the type of light

source would have been an obvious design choice to one of ordinary skill in the art, in order to provide an inexpensive light source which is readily available. Further it would have been obvious to one of ordinary skill in the art to pulse the LED during detector readouts in order to save energy.

Regarding Claim 8, the modified device of Sano teaches the PC board has a plurality of sensors 13 for determining a number of rotations (Col. 7, lines 16-17).

Regarding Claim 9, the modified device of Sano teaches the sensors may be magnetic sensors (i.e. Hall sensors) (Col. 3, lines 44-50).

Regarding Claim 10, the Hall sensors of the modified device of Sano teaches would by necessity have more than one signal type, in order to signal a change in a condition.

Regarding Claims 11 and 33, the modified device of Sano does not use the explicit term "bit". However, Sano teaches the photo-interrupter comprising at least two detectors along a code track (See Fig. 4). The detector 9 would therefore read at least two "bits" of data which is enough to determine a location along the disk. It should also be noted that the photo-interrupter has a finite size and therefore exists at an arbitrary number of positions simultaneously. Further, pixilated detectors are well known in the art and it would therefore have been obvious to one of ordinary skill in the art to provide pixilated detectors, such as CCDs, in order to provide a greater resolution for code reading. The precise number of pixels per bit would have been an obvious design choice to one of ordinary skill in the art to provide an appropriate resolution.

Regarding Claim 14, the modified device of Sano teaches the PC board has a plurality of sensors 13 for determining a number of rotations (Col. 7, lines 16-17). The modified device of Sano teaches the sensors may be magnetic sensors (i.e. Hall sensors) (Col. 3, lines 44-50). Sano does not explicitly teach placing a magnet on the turn ring. However, Sano teaches the magnetic type sensor comprises a magnet which is the analogue to the photo-interrupter 12 in Fig. 5. Therefore, it would have been obvious to one of ordinary skill in the art to place the magnet for sensing rotations on the turn ring, in order to implement a magnetic type sensor in direct analogy to the photo-interrupter as taught by Sano.

Response to Arguments

Applicant's arguments filed 7/30/2003 have been fully considered but they are not persuasive.

Regarding Claims 1 and 25, Sano teaches a code disk containing marks along the circumference which indicate at least one position uniquely. For example, figure 4 shows a code disk with a group of two markings on the lower right side which are not visibly repeated elsewhere along the circumference, thus uniquely indicating that position. Moreover, it should be noted that the claim does not recite the code disk pattern identifies the exact position at all places around the disk, but only one location. In other words a disk with only one mark (i.e. an index mark) which is well known in the art would also read on the uniqueness recitation of claim 1. It should also be noted that a code disk can only have one rotational position at a given time.

Regarding Claim 6, it should be noted that photo-interrupters are defined by the action of light from a light source being either blocked or not blocked from reaching a photodetector, not the precise nature of the photodetector which would be a design choice.

Regarding Claim 7, the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).

Allowable Subject Matter

Claims 15-24 are allowed.

Claims 4, 13, and 26-31 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

The following is an examiner's statement of reasons for allowance: regarding Claim 15, the prior art of record fails to teach or reasonably suggest a rotational position sensor comprising, a turn ring with gear teeth engaging gear teeth on a housing as recited in Claim 15.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric Spears whose telephone number is (703) 306-0033. The examiner can normally be reached on Monday-Friday from 10:00am to 6:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Porta can be reached on (703) 308-4852. The fax phone number for the organization where this application or proceeding is assigned is (703) 308-7724.


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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

EJS
10/31/03


Que T. Le
Primary Examiner